REMARKS

Reconsideration and allowance are respectfully requested.

Claims 98, 99, and 15 stand rejected under 35 U.S.C. §102 as being anticipated by Brustoloni. This rejection is respectfully traversed.

To establish that a claim is anticipated, the Examiner must point out where each and every limitation in the claim is found in a single prior art reference. *Scripps Clinic & Research Found. v. Genentec, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). Every limitation contained in the claims must be present in the reference, and if even one limitation is missing from the reference, then it does not anticipate the claim. *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565 (Fed. Cir. 1986). Brustoloni fails to satisfy this rigorous standard.

The Examiner states that "[t]he Examiner has full latitude to interpret each claim in the broadest reasonable sense." The Examiner is reminded that such interpretations must be reasonable when interpreted by one of ordinary skill in the art in light of the specification. See MPEP §2111.

The rejected claims are canceled in favor of new claims 106-171. Each of the new independent claims is similar to independent claim 98, but further recites that the communication gateway has "a gateway address pool comprising a limited number of available outside-realm gateway addresses" for enabling outside-realm representation of inside-realm nodes. Multiplexing information is provided that includes at least one of network address information and port information of at least one of the inside-realm node and the outside-realm node. The term multiplexing, from which the term "multiplexation" used in the specification is derived, refers to the property or characteristic of being able to support or transfer multiple simultaneous connection

through a gateway or similar network element. This multiplexing information is predetermined connection information used to significantly improve the multiplexing characteristics of the gateway.

Each independent claim also specifies that "prior to initiating establishment of said requested connection," a network address allocation is performed using that multiplexing information. After a unique combination of the selected candidate outside-realm gateway address and the multiplexing information is found that is not already being utilized for another connection, then "establishment of said requested connection based on the unique combination of outside-realm gateway address and said multiplexing information" is initiated.

Relevant portions of the text in Brustoloni relied upon by the Examiner in the rejection are quoted here for convenience:

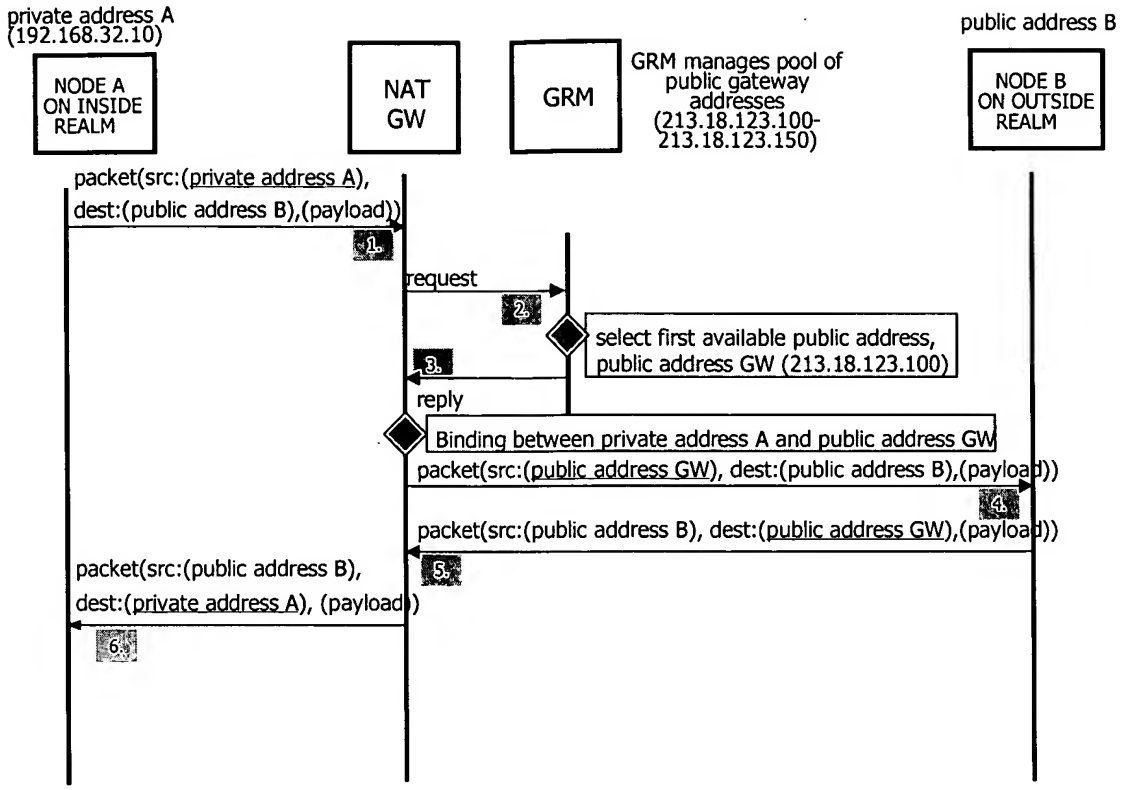
> In accordance with NAT, the clients on a private network are assigned individual IP addresses from a pool of IP addresses ... NAT is a feature that may be implemented in the router and that provides unambiguous translations between private and global addresses, allowing the plural clients to share the access link. When a client sends a packet to a foreign address (i.e., one not in the private network), NAT modifies the packet header, substituting the client's private source IP address and generalized port number (GPN) by a global IP address and GPN ... A single global IP address may be shared as the source address of packets sent by all or some of the clients to the Internet. In order to properly route incoming packets sent from a foreign address on the Internet to a client on the private network, NAT maintains in a translation table, stored in memory, the one-to-one correspondence between private and global IP addresses and GPNs. When NAT receives a packet from the Internet, NAT modifies the packet header's destination from global to private (IP address, GPN) values, according the NAT's translation table, allowing the packet to reach the respective client in the private network."

Col. 1, lines 27-60.

This text describes a conventional network address translation (NAT). But there is no teaching to provide "multiplexing information that includes at least one of network address information and port information of at least one of said inside-realm node and said outside-realm node." Nor does the quoted text describe allocating a network address for a requested connection "prior to initiating establishment of said requested connection." Rather, Brustoloni simply assumes that the requested connection has already been established.

Brustoloni's NAT description is similar to a conventional NAT in a gateway described in the background of this application where every time a private host wants to connect to a public realm host, a public IP address is reserved for that host. As a result, once all gateway addresses have been consumed, any further connection requests must be rejected. This procedure is a one-to-one mapping between host and public address, and hence, no other host can use the address until the address is released. This a real problem when the number of public IP addresses is limited as they are in accordance with IPv4, as explained in the background.

To assist the Examiner in understanding the differences between what is recited in the independent claims and a conventional NAT, the following illustration of a conventional NAT is provided.



In this illustration, as in Brustoloni, there is no combination of candidate gateway address and additional multiplexing information considered during the address allocation procedure which is performed at the GRM between signals 2 and 3. In fact, the claimed multiplexing information is generally not available at the time of gateway address allocation, but only afterwards when the address allocation is completed and the first packet arrives to the gateway. After the address allocation is completed when signal 3 is transmitted, the separate process of network address translation in the NAT gateway begins. In the actual address translation for individual packets sent over an established connection, the address of the outside node is indicated in the IP header when packets are transferred back and forth. For packets going to the outside node, the outside network address is indicated in the destination address field of the IP

header, and for packets going to the inside node, the outside network address is indicated in the source address field. This address translation, which is part of the ordinary indication of source/destination in packet communication between two nodes, is simply not the same as using the network address of the outside node for intelligently selecting a suitable public IP address before the connection is established. Moreover, the address translation occurs after the address allocation process is completed.

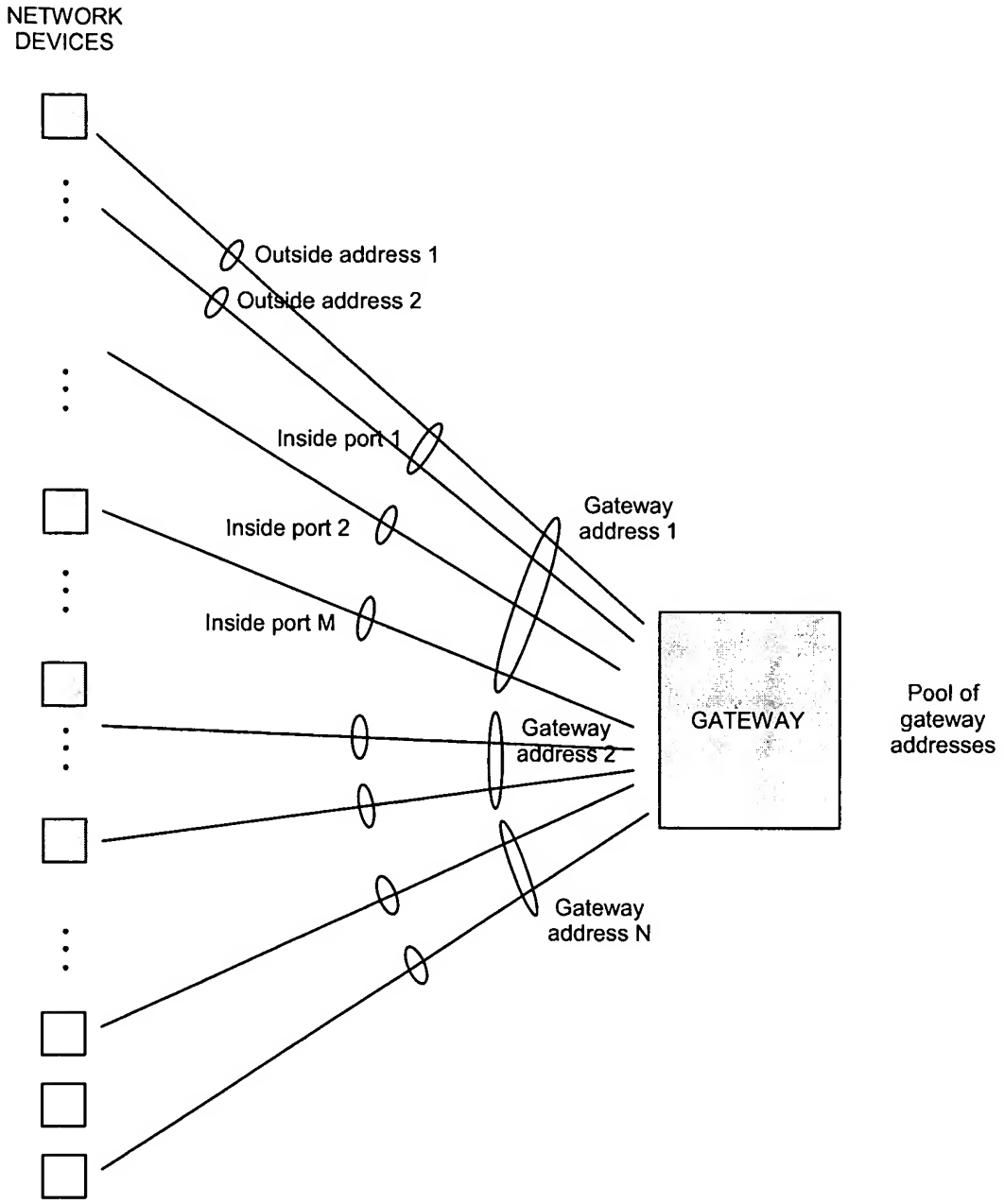
It should be understood that the gateway address (and optionally also gateway port information) is what is to be assigned for a requested connection. Node-specific information is used as additional multiplexing information in the process of assigning the gateway address and optional gateway port.

There is no evidence in Brustoloni of using multiplexing information in the form of network address and/or port information of an inside node and/or an outside node when selecting a public *gateway* address. Brustoloni simply selects the first available address. By selecting the outside/public gateway address using the outside gateway address in combination with the multiplexing information, an outside-realm gateway state representation is defined that has no counterpart in a predetermined set of existing gateway connection states.

It is important to understand the difference between the two separate processes: network address allocation and network address translation. The claims are directed to specific procedures performed as part of network address allocation, prior to initiating establishment of a requested connection. In contrast, the Brustoloni text relied on by the Examiner is focused on network address translation which occurs after a requested connection has been established.

Also important is the significant multiplexing gain achieved by the claimed technology that provides support for a considerably larger number of simultaneous connections compared to

any of the other schemes described in the background of this application, as schematically illustrated with a simple example below. As explained in the background, the inventive technology offers may even render a fast introduction of the IPv6 protocol unnecessary.



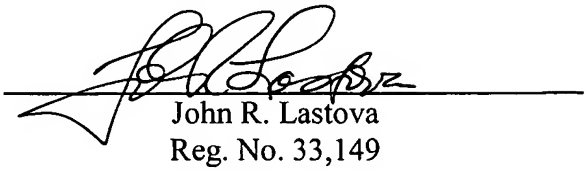
With only a limited number N of gateway addresses, a much larger number of simultaneous connections can be supported. For example, instead of reserving gateway address number 1 to a single network device, as in a traditional NAT as used in Brustoloni, many network devices can benefit from this gateway address. By using for example inside port information as multiplexing information in the address allocation procedure, it is possible to support with a single gateway address at least as many devices as the number M of inside ports. By also using additional multiplexing information, such as outside address, an even larger number of network devices can benefit from the same gateway address.

As a non-limiting example, a traditional NAT having 1000 gateway addresses can support 1000 simultaneous connections. However, a NAT having 1000 gateway addresses and information on 1000 inside port numbers, and/or information on 500 outside node addresses can support up to 1000 x 1000 = 1 000 000 and/or 1000 x 1000 x 500 = 500,000,000 simultaneous connections by using the initial address allocation procedure proposed by the claimed technology. In a world in which almost all technical devices, such as mobiles and computers but also refrigerators and microwave ovens and toasters, are or will be connected to the Internet, there is and continue to be a demand for gateways that can support a very large number of simultaneous connections.

The application is in condition for allowance. An early notice to that effect is requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
John R. Lastova
Reg. No. 33,149

JRL:maa
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100